

Information Request TEC-3-11

Referring to Mr. Salamone's Rebuttal Testimony at p. 5, lines 5-7, please provide supporting documentation for the statement that "diversity factor values range from 95% to 100%." Also, provide a definition of "diversity factor."

Response

The information provided was based on my professional knowledge and experience with the NSTAR Electric distribution system. Support for the statement can be derived from the coincidence factor seen at substations where substation loads and circuit loads are recorded. The table below is an example of the coincidence factors seen at a substation:

Station 211 Peak				129,422	6/27/2003
Bus Section 1	Amps	Volts	kVA		
Transformer 110A	1,388	14.5	34,918		
211-H2	153	14.5	3,860		
4 kV Xmr 14A	0	4.2	0		
211-H11	124	14.5	3,112		
211-H7	235	14.5	5,913		
211-H1	301	14.5	7,584		
59-1383	239	14.5	6,004		
211-H8	223	14.5	5,608		
Cap Bank 1 Shutdown		14.5			
	1,275		32,080		

Bus Section 2	Amps	Volts	kVA		
Transformer 110B	1,455	14.1	36,839		
211-H5	245	14.1	5,989		
211-H10	220	14.1	5,380		
211-H12	204	14.1	4,988		
59-1384	309	14.1	7,571		
325-1394	200	14.1	4,900		
4 kV Xmr 14B	862	4.1	6,116		
Cap Bank	0	14.1			
	2,735		24,266		

Bus Section 3	Amps	Volts	kVA		
Transformer 110C	1,379	14.2	33,893		
211-H3	4	14.2	90		
301-1386 avg	262	14.2	6,448		
301-1387 ph 1	258	14.2			
301-1388 ph 2	257	14.2			
301-1389 ph 3	273	14.2			
211-H14	222	14.2	5,448		
211-H13	417	14.2	10,254		
34-1378	200	14.2	4,918		
Station Service #3	12	14.2	295		
Station Service #2	6	14.2	147		
4 kV Xmr 14C	1024	4.1	7,294		
	2,934		34,895		

Bus Section 4	Amps	Volts	kVA		
Transformer 110D	1,037	13.9	25,019		
351-1385H	150	13.9	3,630		
211-H4	118	13.9	2,846		
211-H6	194	13.9	4,678		
59-1393	251	13.9	6,058		
Cap bank	0	13.9			
Station Service #4	12	13.9	290		
325-1388	345	13.9	8,319		
	2,015		25,821		

Bus Section 1	8.1%	Difference between sum of circuits and load on bus	Bus Section 1 Radials/Xmr	26,076
Bus Section 2	1.8%		Bus Section 2 Radials/Xmr	22,473
Bus Section 3	3.0%		Bus Section 3 Radials/Xmrs	23,529
Bus Section 4	3.2%		Bus Section 4 Radials/Xmr	7,814

Mr. Salamone has used the term diversity factor and coincidence factor interchangeably as these terms describe the same concept through mathematically inverted ways. Please refer to the response to Information Request AG-3-4 for the definition of diversity factor.

Information Request TEC-3-14

On page 7 of Mr. Salamone's Rebuttal Testimony, Mr. Salamone states, "For DG units of 1 MW or more, loads normally supplied by customer generation are also added to these values based on the potential unavailability of that generation during peak load conditions." In its supplemental response to TEC 2-1, NSTAR identified only two customers other than MIT with generation over 1 MW. (Commonwealth G-3 customer with 1,050 kW, and BECO T-2 customer with 1,800 kW.) Please identify the circuit serving these customers, the total capacity of each circuit, and the maximum monthly loads in 2003 on the circuits (including the date and time of peak). Please supply historical circuit planning studies and documentation showing the explicit assumptions for these two customers.

Response

The circuit feeding the Commonwealth G-3 customer is the #941 circuit, which is supplied from Manomet Substation. This customer is also fed from backup circuit #943, which is supplied from West Pond Substation. The circuits feeding the Boston Edison T-2 customer are #536-76H and 143-81XYH. These circuits are supplied from Hyde Park Substation. The requested reports are no longer available because the studies concerning their service were performed many years ago.

Information Request TEC-3-15

On p. 14, lines 1-2 of his Rebuttal Testimony, Mr. Salamone states that the DG installations of 1 MW or more are specifically tracked and added to the coincident peak load of the substation. Please identify the two substations serving the two customers identified in Information Request TEC 3-14, the capacity of each substation, and the monthly peak load on the substation in 2003 (including day and time of the peak). Please provide historical substation planning documents showing explicit inclusion of the two customers noted in Information Request TEC 3-14.

Response

Please refer to the response to Information Request AG-1-10(Supp) and Attachment AG-1-10(a)(Supp), AG-1-10(b)(Supp) and AG-1-10(c)(Supp). These attachments provide information concerning the planning process for the substations identified in Information Request TEC-3-14. The document does not separately identify the two customers because the information concerning customer loads is embedded in the load forecast that is developed for total projected substation loads. The Company objects to the request for monthly peak loads for the substations identifying the month and time of peak because this information is not available in the form requested and it would require a special study and extensive data processing that would be unduly burdensome to develop.

Information Request TEC-3-19

Please provide an estimate of the costs per kW per foot (or comparable unit) of distribution circuit configurations for secondary service for (a) overhead construction; (b) radial underground construction; and (c) network underground construction. Please conclude [sic] all assumptions and inputs.

Response

The average engineering estimates employed by NSTAR Electric are developed on a per-foot basis. The estimates for the requested equipment are as follows:

- a) Overhead construction - \$5/ft
- b) Radial underground construction including installation of conduit - \$10/ft
- c) Network underground excluding installation of conduit - \$20/ft

This information is based on the historical experience of NSTAR Electric engineers.